WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005MT64B

Title: STUDENT FELLOWSHIP: Watershed carbon distribution and flux across environmental gradients

Project Type: Research

Focus Categories: Geochemical Processes, Solute Transport, Water Quality

Keywords: carbon, watershed

Start Date: 03/15/2005

End Date: 06/30/2006

Federal Funds: $3,000

Non-Federal Matching Funds: $0

Congressional District: At Large

Principal Investigator:
Brian Leonard McGlynn
Montana State University

Abstract

Introduction: Dissolved organic carbon (DOC) is an important water quality constituent. It makes a significant contribution to the acidity of natural waters, affects biological activity, influences nutrient availability, and controls the solubility, transport and toxicity of metals. DOC is related to CO2 because as CO2 concentrations increase, concentrations of DOC in stream and groundwater will increase. The specific controls on CO2 generation and the flux of this CO2 to the atmosphere are poorly understood. I propose work that will address ecosystem carbon exchange across environmental gradients at spatial scales from points to hillslopes and riparian areas and at temporal scales from instants to seasons to years. I will take measurements of soil CO2 production, the efflux of this CO2 to the atmosphere, and the export of DOC through streamwater discharge to determine the primary forcing variables of and the spatial and temporal variability in CO2 and DOC generation and flux across a small catchment in the northern Rocky Mountains.